

# Daily GLOWBUGS

## Digest: V1 #39

via AB4EL Web Digests @ SunSITE

Purpose: building and operating vacuum tube-based QRP rigs

[AB4EL Ham Radio Homepage @ SunSITE](#)

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%%%% GlowBugs %%%%% GlowBugs %%%%% GlowBugs %%%%% GlowBugs %%%%%

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**Subject: glowbugs V1 #39**

**glowbugs**

**Thursday, May 22 1997**

**Volume 01 : Number 039**

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Date: Wed, 21 May 1997 17:53:42 -0500 (CDT)

From: mjsilva@ix.netcom.com (michael silva)

Subject: Re: ROCK SOCKETZ!

Besides fitting FT-243s in an octal socket, somebody else on the list once pointed out that the spacing of a TV lead-in plate (not sure of the terminology -- I think it's the antenna rotator connection) is just right to take them. Also, you can get the plug end and make adaptors for different crystals, or for a VFO input. Even Radio Shack has/had them.

73,  
Mike, KK6GM

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Date: 21 May 97 19:00:54

From: Chandler Russell H <rhchan@facstaff.wm.edu>

Subject: Re: glowbugs V1 #38

Far Circuits can be reached at:

e-mail: farcir@als.net  
WWW: http://www.cl.als.net/farcir

Russ

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Date: Wed, 21 May 1997 18:04:10 -0500 (CDT)

From: Bob Roehrig <broehrig@admin.aurora.edu>

Subject: Re: PCB layout/fab

On Wed, 21 May 1997, Jeff Duntemann wrote:

> That's FAR Circuits, in East Dundee, Illinois. (Or was it West Dundee? I  
> get my Dundee's confused sometimes...)

FAR does excellent work, however the last time I talked to him, he  
dose not do commercial work - he only does ham stuff - but you can check  
to make sure.

E-mail broehrig@admin.aurora.edu 73 de Bob, K9EUI  
CIS: Data / Telecom Aurora University, Aurora, IL  
630-844-4898 Fax 630-844-5530

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Date: Wed, 21 May 1997 19:29:51 -0400 (EDT)  
**From:** "Walter L. Marshall" <wmarshall@CapAccess.org>  
**Subject:** Re: Playing with a modern spark tuner --- suprising funzies

Dear Bob,

I used cardboard and hot glue to make the loose coupler.  
Cardboard squares with holes cut in them to allow the wax  
paper tube (or tin foil tube) to slide inside the toilet  
paper tube. I used triangle pieces to buttress the squares,  
and hot glued it all to a board. The T.P. tube is also glued  
to two of the three squares.

Is this very clear?

Walter

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Date: Wed, 21 May 1997 19:57:21 -0400 (EDT)  
**From:** rdkeys@csemail.cropsci.ncsu.edu  
**Subject:** Glowbugging socket adapter thoughts

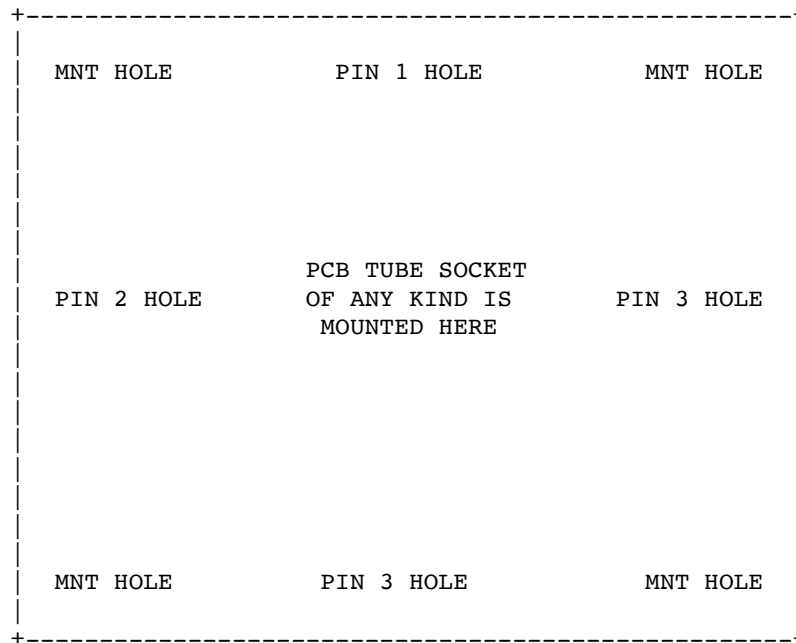
Brainstormlightbulbwentofinthe greymattersthingie just hit me.....

I have long been thinking of a generic socket that could be put in any  
sort of average glowbug where space was not at a premium (the kind I like  
to get my gemittenfingerpokins into). Originally, I wanted to devise a  
generic adapter plate for '01'A's to ``modern octals and 7/9 pinners''.  
This would be to place any tube into a generic triode baseplate for  
regenerators of various sorts. But I got to thinking a little more,  
and it might be feasible to do something that would be much more universally  
adaptable.

CONCEPT: To be able to replace a generic triode tube function with any  
sort of modern device (tube or fet), for receivers, some sort  
of adapter plate is required with N pins to 4 pins.

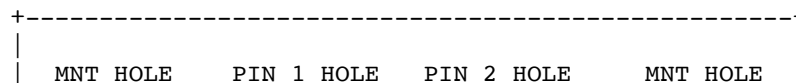
CONCEPT: To be able to replace a generic 7/8/9 pin tube for any possible  
generic 4/5/6/7/8/9 pin tube, for receivers or small transmitters,  
some sort of adapter plate is required with 4/5/6/7/8/9 pins to  
8 generic pins.

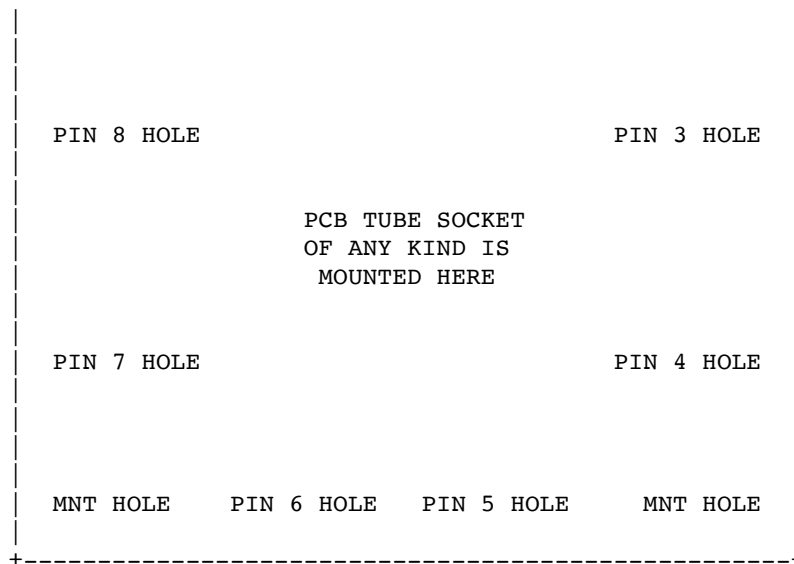
1. If a triode 4 pin tube is the basic design goal, a square plate 3 inches on a side with 1/8 inch mounting holes in the 4 corners and one 1/8 inch pin adapting hole in the middle of each side should suffice. Any sort of 4/5/6/7/8/9 pin tube socket could then be wired up to a standard 4 pin plate with about 2 inches across the mounts. If the plate were made of HEAVY single sided PC board, glass epoxy (although lesser stuff would probably do for us cheapskates), with LARGE pads for the 4 pins to connect to a generic socket (such as a PCB mounted 7/8/9 pin socket), then a generic baseplate could be fabricated and easily etched/drilled at home or by a small shop. Someone should be able to CAD up some sort of 4, 7, 8. and 8 pin adapter plate set up for the most common garden variety of receiving tubes like the 6SN7, 6J5, 12AT7, 6AB4, or such. It might look something like this (this ascii rendition is blown up about 2 x):



Thus, any triode tube could be wired up to replace an '01A generically with just a few jumper wires in place to connect the generic PCB socket to the pinouts. Anytime a triode is needed, mount up a baseplate and connect up the wires to the baseplate, and then bolt on an adapter plate for whatever tube is desired. A small number of adapter plates would cover most of the commonly used tube types.

2. The reverse would apply in the second concept. Here, it is desired to make a generic 8 pin tube baseplate and adapt any other kind of tube to an 8 pin standardized pinout. The adapter plate might look something like this:





Here, the idea is to make any tube fit a planned 8 pin pinout where a generic triode, pentode, dualtriode, etc., was desired as a functional building block. Jumpers from a one adapter plate design, or a set of generic adapter plates for the common tubes to a generic 8 pin output, could be made.

Am I totally off the deep end, or is this something that might be a usable or workable thing for generic glowbugging? I have seen a few similar kinds of adapters for test setups and the like, but not for a standard building tool, except in the ratshack IC building block pad for pin mounts for a single IC. I got the idea of combining the tube sockets into something like that from the SE 1420 tube mount dating from 1918. So, nothing really new under the sun, but a fresh brewed twist, perhaps.

73/ZUT DE NA4G/Bob UP

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Date: Wed, 21 May 1997 20:02:42 -0400 (EDT)  
**From:** rdkeys@csemail.cropsci.ncsu.edu  
**Subject:** Re: Playing with a modern spark tuner --- suprising funzies

>  
> Dear Bob,  
> I used cardboard and hot glue to make the loose coupler.  
> Cardboard squares with holes cut in them to allow the wax  
> paper tube (or tin foil tube) to slide inside the toilet  
> paper tube. I used triangle pieces to buttress the squares,  
> and hot glued it all to a board. The T.P. tube is also glued  
> to two of the three squares.  
> Is this very clear?  
> Walter  
>

Yes, quite clear. I do about the same thing but I prefer to use good old black (almost like the real thing bakelite) PVC waterpipe. AT low HF it works fine, and will just superglue together with various shapes of black acrylic plastic sheet pieces in 1/8 or 1/4 inch thickness.

I have never had good luck with toilet paper tubes or foil lined tubes, but my expectation is that the post office cardboard mailing tubes will work pretty well. Any foil may or may not be advantageous.

I sense we have a new thread a 'goin' 'ere.....(:+)}..... or is that a new drip of hot-glue/superglue.....(:+)}.....

Now to install a Tuska Tickler (see 1920 QST) and some sort of audion emulating glowdevice, and a JANuine regenerator we begins ta have.....

73/ZUT DE NA4G/Bob UP

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Date: Wed, 21 May 1997 20:15:53 -0400 (EDT)  
**From:** rdkeys@csemail.cropsci.ncsu.edu  
**Subject:** Re: Glowbugging socket adapter thoughts

Another lightbulbwentoffinsidethegreymattersthingie.....

Take the adapter plates and put banana jacks into the baseplate and banana plugs into the adapter plate (all drilled according to a precise universal pin pattern) and then the adapter plates would be quickly switchable between tube types.

Bob/NA4G

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Date: Wed, 21 May 1997 17:29:40 -0700 (PDT)  
**From:** Ken Gordon <keng@uidaho.edu>  
**Subject:** Re: ROCK SOCKETZ!

> didn't the ft-243 rocks fit into the pins of an octal toob socket?  
> matt  
>

Yes!

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Date: Wed, 21 May 1997 20:47:03 -0400 (EDT)  
**From:** EWoodman@aol.com  
**Subject:** Re: Playing with a modern spark tuner --- suprising funzies

Bob,  
I had put together something similar earlier this year. My two girls, aged 9 and 12, were really interested in a crystal radio after I told them stories about when I was a kid hiding under the covers at night with a single magnetic phone pushed against my ear. I was listening to about four stations

at a time but it was fun. As I recall, and this was about 35 years ago, my antenna wire connected directly to the coil and then I had some sort of slider on the coil. Didn't exactly tune! Just about whatever was strong on the BC band was what you heard.....all at once! Being a bit smarter now (I think!) this time I wound a primary and secondary. I'm sitting here looking at the coil now. It's about 2.5 inches in diameter and the coupling is.....just a second while I check.....about 1.25 inches. Tuned it with a couple of well-padded 110pf variables. Detector was a 1N34. I also found that a small capacitor across the detector improved the volume by a noticeable amount. I never would have thought of doing this but got the idea from an old article on crystal sets. They recommend 100 to 250pf or maybe less depending on the detector. You can also put a tiny variable across it. I figured it would bypass too much and make it worse. The article says it "increases audibility from 55 per cent to 85 per cent" whatever that equates to. Article also says that mica diaphragm phones are the best for sensitivity. Have you ever seen or heard of these? I'm guessing if any still exist they must be pretty scarce!

I had no trouble copying 160 and 75M AM although they were not too far away. Someplace down in Massachusetts (I'm in Southern NH). It was a lot better on 160 because of less congestion. That station was also only about 20 or so miles away. By the way, the antenna was my 170ft end-fed wire and a cold water pipe ground.

So how do you make a crystal heterodyne detector? I know what it does but how do you actually configure it?

(I've got three nice new solid state transceivers sitting here in front of me with quite a bit of dust on them. Sometimes I get the feeling I'm going backwards! )

Eric KA1YRV

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Date: 21 May 97 21:00:45  
**From: Chandler Russell H <rhchan@facstaff.wm.edu>**  
**Subject: Ooops!**

Wouldn't you know it, my first posting to 'glowbugs' and I couldn't even get that right. The correct addresses for Far Circuits are:

Email: farcir@ais.net  
WWW: <http://www.cl.ais.net/farcir>

I promise to have my lens prescription changed.

de KU4FP / Russ

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Date: Wed, 21 May 1997 21:34:58 -0400 (EDT)  
**From: "Walter L. Marshall" <wmarshall@CapAccess.org>**  
**Subject: Re: Playing with a modern spark tuner --- suprising funzies**

I meant to use the cardboard tube inside the foil. Not

the foil itself. Or the tube from wax paper.  
Walter

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Date: Wed, 21 May 1997 20:30:59 -0500 (CDT)  
From: mjsilva@ix.netcom.com (michael silva)  
Subject: Re: 6146 Transmitter

Ken wrote:

>> Thanks for the quote from the RSGB Handbook. It's an interesting  
>>bit of info. I finally found similar info in Terman's Radio  
>>Engineering.  
>  
>Could you give us that quote, please? I would really like to know  
>that I am not totally nuts! :-)

Well, on re-reading it I'm just as confused as ever! Here it is, from  
Terman's "Electronic and Radio Engineering":

"The circuit of Fig. 14-3b is particularly well adapted to use with  
beam power tubes; if a pentode tube is used then the suppressor grid  
must be tied to the screen or the plate electrodes. Connection of the  
suppressor to the cathode is not permissible in this circuit since a  
radio-frequency voltage exists between the cathode and ground, and thus  
capacitive coupling between the oscillator and output sections would be  
introduced by a cathode-connected suppressor"

The circuit in question is the "standard" screen-bypassed, cathode tap  
Hartley ECO. So, it's "well adapted" to use with beam power tubes (the  
vast majority of which have their beam electrodes connected to the  
cathode), but not pentodes with the same connection? Also, from an RF  
standpoint I don't see any difference between connecting the supressor  
to ground and connecting it to the screen or plate -- why would you do  
the latter? Though, since you shouldn't be swinging \*that\* large a  
voltage on the plate I wouldn't expect the plate to be going below the  
screen anyway.

73,  
Mike, KK6GM

---

Date: Wed, 21 May 1997 22:55:39 -0400 (EDT)  
From: leeboo@ct.net (Leon Wiltsey)  
Subject: sale of cheap tubes

Hi gang

I receintly posted a message telling you all I had discovered a quantity of  
new tubes.  
the owner will sell them for 1993 list, they are all new in boxes. I made  
the mistake  
of telling him I would run an inventory of his stock, He agreed. When the  
time came to  
start he brought out 7 tube caddied of tubes, plus he has a 9 foot wall with

3 shelves full.

So far the I have inventoried many hundreds of tubes and not near done. Am still bringing

home tube caddies full to inventory. YES THERE ARE SOME 1VOLT TUBES IN HIS STOCK.

when I get thru I will post a message. As I said he only wants 1993 prices and on some

even less. I should be thru by the end of the week. I am saving all the inquiries I received

and will answer them as soon as I have the inventory completed and a copy of his price

list.

I SUB TO BOTH GLOWBUGS & BOATABCHORS

68 yr old semidisabled senior

(stroke got my balance & hand to eye coordination)

old old old ham but I'm back agn

now KF4RCL TECK+ (MUCH HAPPINESS)

PLAY KEYBOARD AND SING?

BUILD MOST OF MY STATION EQUIP

(tubes that is no SOLID STATE)

no trash music (anything composed after 1965)

Leon B Wiltsey (Lee)

4600 Lake Haven BLVD.

Sebring, Fl. 33872

SEBRING FL. THAT WONDERFUL PLACE WHERE THERE IS NO QRM  
FROM ANYTHING LOCAL

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Date: Wed, 21 May 1997 22:02:00 -0500 (EST)

From: "Roberta J. Barmore" <rbarmore@indy.net>

Subject: Crystal Sockets

Hi!

Bashed up a knee tonite & vy tired but wanted to mention this while I was thinkin' of it. Much talk of rock sockets, and the Usual Suspects (400R TV leadin sockets, octals, etc) have already got mentioned.

But there is an older trick that works well, too. Take a five-prong tube socket. Pins are unequally spaced on a 3/4" circle--1,2,4 & 5 are grouped, with a wide gap either side of 3 (it's the grid, that's why). Hook 3 to 4 and take that to the earthy side of the xtal connection; hook 2 to the hot side. Now an FT-243 will fit happily between 2 & 3, and a "doorknob" crystal (or rectangle holder with 1/8" dia pins on 3/4" centers, Bud, Valpey et al made such) fits between 2 & 4. For the tiny new crystals with dinky pins, it's not hard to take some plex & 1/8" brass rod and make a little adaptor--the toy pins will fit contacts stolen from a mini tube socket. (And for those who dunno, 1/8" rod will take 6-32 threads nice as can be--tap the plex to match and dab some epoxy on).



AES is selling the ceramic plate version 5-pin sockets, a Chinese copy of the old-style thing but one of their better efforts.

73,  
--Bobbi

PS: working on a "cootie" key. If I get it percing, I'll try to do up dwgs if anyone wants to make one--only tricky part is cutting a straight slot down the center of 1/4" square brass bar. Dremel cut-off wheel in a press with the quill locked and a drill-press vise to hold the bar will do the job but I'm guessing that combination of toys isn't common. ('Tis a sort of slop-bucket milling setup and you \*do\* wear the good safety glasses).

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Date: Thu, 22 May 1997 03:21:43 +0000  
From: Sandy W5TVW <ebjr@worldnet.att.net>  
Subject: FMT

Got measurements first and second runs here. Hope my interpolation and math is OK! Good signals here in New Orleans.

73,  
E. V. Sandy Blaize, W5TVW  
"Boat Anchors collected, restored, repaired, traded and used!"  
417 Ridgewood Drive,  
Metairie, LA., 70001  
ebjr@worldnet.att.net  
\*\*Looking for: 860 tubes, WL-460 tubes\*\*  
\*\*Butternut HF2V antenna, G-R test gear.....\*\*\*

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Date: Wed, 21 May 1997 23:24:04 -0500 (CDT)  
From: Chris Broadbent <cfb@bga.com>  
Subject: Thanks to all RE: My National NBS-1

Thanks to all who offered me information on my National NBS-1.

Thanks especially to Jim Owen (K4CGY) who sent me a very fine copy of the Manual for said beast. He obviously took care in making the copy, as every page is clear and well aligned with the circuit diagram on larger paper to avoid breaks.

Jim, please let me know what I owe you.

What a wonderful crowd on this distribution list.

- - -

Cheers,

Chris F. Broadbent ( KC5VQL )

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Date: Wed, 21 May 1997 21:59:15 -0700

From: "Paul Carreiro, N6EV" <carreiro@barepower.net>

Subject: Re: ROCK SOCKETS (A neat trick)

At 04:49 PM 5/21/97 -0400, Boatanchor Bob wrote:

>>

>> didn't the ft-243 rocks fit into the pins of an octal toob socket?

>> matt

>>

>

>Yes, you can fit two FT-243 rocks on an octal socket, A-La Johnson.

>That is a very common rock socket these days for general usage in HB

>gear, when the real sockets are not available. A simple high impedance

>snap switch or rotary will switch between the two, and if you mount say

>3 octal sockets, you can switch 6 crystals, easily.

>

>Bob/NA4G

To expand on this..

I found a neat trick outlined by Dave Ingram, K4TWJ in his book "Keys Keys Keys" (1991, CQ Communications). Dave has a section in the back of the book that describes "Classic Rigs" to be used with the bugs and keys. Among these classic rigs is a 6L6 transmitter.

The trick involves adding two capacitors on a standard octal socket that will allow a single crystal to be used on 4 slightly different frequencies, depending on what pins the crystal is inserted into.

Connect a 150uuF cap between pins 1 and 5

Connect a 250uuF cap between pins 3 and 7

Pins 1 and 3 run off to the oscillator circuit as you would normally do.

Crystal position 1 - 3 ... No frequency shift (caps not in circuit)

Crystal position 3 - 5 ... The 150uuF cap is in series with the xtal

Crystal position 1 - 7 ... The 250uuF cap is in series with the xtal

Crystal position 5 - 7 ... Both the 150uuF and 250uuF caps are in series with the xtal.

Seems like a handy trick to have under the belt. I have not personally gotten around to trying this yet so can't attest to how much frequency shift you can expect with the values presented. Has anyone else tried this? Any draw-backs?

P.S. Speaking of "Keys"... a sad note.. Steve Nurkiewicz, N2DAN, the creator of the famous Mercury CW key became a silent key a few nights ago from cancer. Ask anyone who has one of his keys.. they will say they are without a doubt the best available. (I'm not regretting postponing my order).  
"73 and ZUT OM"

As always.. I'm looking for suggestions for the web site.

73 all.

Paul N6EV

Paul F. Carreiro - N6EV - ex-N6HCS - El Camino Village, CA

E-Mail: carreiro@barepower.net - <http://www.barepower.net/~carreiro/>

QRP - Boatanchors - Glowbugs - Mobile CW - QRQ +40WPM - ZUT!  
NorCal QRP #367 - QRP QRCI #8885 - CW FISTS #1407 - QRP-L #236  
Zuni Loop Mountain Expeditionary Force (QRP Field Day)

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Date: Thu, 22 May 1997 15:05:08 +0200  
From: Jan Axing <janax@li.icl.se>  
Subject: Re: 6146 Transmitter neutralization

Brian Carling (Radio G3XLQ / AF4K) wrote:

[About neutralizing problems in tetrode amplifiers]

> What say ye, lads?  
>  
> Bry, AF4K

Here is my contribution. Sure there are others out there.

A good shield between the grid and plate circuits is imperative. The only coupling you want is the feedback capacitance in the tube. There are many ways to neutralize a tube but in the case of a 6146, the ubiquitous capacitance bridge seem to work best. The grid circuit is here a parallel resonance tank, often the plate tank of the driver. The neutralizing cap is connected between the final plate and the cold side of the grid tank. The cap decoupling the cold side in the input tank is also part of the bridge. This scheme can be seen in many commercial transmitters like Heath SB401. Another common way is to use a "longer" plate coil with a cold center tap. Connect the neutralizing cap between the grid and the other end of the tank.

There are also many ways to perform the neutralizing. The method I use is; Tune up the amplifier on the highest frequency of operation. If it is oscillating badly, try tuning up with reduced screen voltage. Now disconnect the screen supply and key it up again. If the tube amplifies without screen voltage, disconnect the plate supply, too. Adjust the neutralizing cap for minimum output and keep an eye on the grid current so you don't exceed its rating. Try to neutralize it with the smallest grid tank decoupling cap as possible. A value around 500-700 pF seems OK. >From here, the plate dip, max output and max grid current should occur at the same time. (don't forget to reconnect the screen supply :-). If not, try to nudge the neutralizing cap a little and check again. If you have tubes in parallel, do the best you can if they are not very well matched.

Still oscillating? Then it is time to check the ground connections. Finally a little reminder; never ever run a tube with only screen voltage applied.

I found out later that this method of adjusting the neutralization is recommended by Kenwood in their manuals.

It's not always necessary to neutralize. Good shielding is often enough. My 144MHz PA with a 4CX250B and a lumped half wave tank is not neutralized but have never oscillated. Not even when

operating in class A.

- ---

Jan, SM5GNN  
Linköping, Sweden

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Date: Thu, 22 May 1997 08:33:50 -0500 (CDT)  
From: Bob Roehrig <broehrig@admin.aurora.edu>  
Subject: FMT

Well folks, it's over. It will be interesting to see how many participated. So far I have received 2 logs (Al & Sandy). I think Al hit his "send key" before my tubes cooled off last night! Even though I didn't originally request it, I appreciate knowing how well my signal was copied.

Two things I would probably do different next time: Change the 40 meter frequency to near 7075 rather than 7175 (in the phone band), and maybe cut down the 2nd period transmission time to just a minute or two. If possible, please let me know how long it took you to find me.

>From my end, everything went pretty well. Power out was 800 watts from the old Johnson Desk KW, as measured on the RF ammeter. Antennas for 80 and 40 were half slopers off the 40 foot tower. Not knowing what direction 20 would be open to, I opted not to use the beam for 20 and instead used an inverted V to give a more non-directional pattern. This antenna is actually a 1/2 wave for 17 meters, fed with 600 ohm line. For some reason there was plenty of RF in the shack - to the point of it getting into the PTT circuit of my old Kenwood 450 FM rig and making it transmit!

Actual xmit freqs were decided on at the very last minute to avoid QRM. I must have bothered someone during the first run on 20 meters as when I finished, he sent "LID" in cw.

E-mail broehrig@admin.aurora.edu                      73 de Bob, K9EUI  
CIS: Data / Telecom    Aurora University, Aurora, IL  
630-844-4898    Fax 630-844-5530

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Date: Thu, 22 May 1997 10:57:21 -0400 (EDT)  
From: rdkeys@csemail.cropsci.ncsu.edu  
Subject: Re: Playing with a modern spark tuner --- suprising funzies

>  
> Bob,  
> I had put together something similar earlier this year. My two girls, aged 9  
> and 12, were really interested in a crystal radio after I told them stories  
> about when I was a kid hiding under the covers at night with a single  
> magnetic phone pushed against my ear. I was listening to about four stations  
> at a time but it was fun. As I recall, and this was about 35 years ago, my  
> antenna wire connected directly to the coil and then I had some sort of

> slider on the coil. Didn't exactly tune! Just about whatever was strong on  
> the BC band was what you heard.....all at once! Being a bit smarter now  
> (I think!) this time I wound a primary and secondary. I'm sitting here  
> looking at the coil now. It's about 2.5 inches in diameter and the coupling  
> is.....just a second while I check.....about 1.25 inches. Tuned it with a  
> couple of well-padded 110pf variables. Detector was a 1N34.

This is exactly the same kind of wow-fun that we saw in the kids at the school.

When I was a geek pencilpocketprotecktorkidwiththewhiteshirtandtieandsatchel around age 8-10 or so, I used to try every kind of xtal set I could get my hands on from all the books in our library (and for some reason our public library in that town had more of that kind of stuff than our univ. library here does today, and it is one of the best on the east coast). Alas, my success rate with them was nil. I could just get them to work enough to make me wanna play some more. This past week, I thought I would try it with the, 40 years later knowledge bit, and it worked much better. In fact, I was pleasantly suprised at how well it did work on a good antenna with proper tuned primary and secondary circuits and coupling.

> I also found  
> that a small capacitor across the detector improved the volume by a noticable  
> amount. I never would have thought of doing this but got the idea from an old  
> article on crystal sets. They recommend 100 to 250pf or maybe less depending  
> on the detector. You can also put a tiny variable across it. I figured it  
> would bypass too much and make it worse. The article says it "increases  
> audibility from 55 per cent to 85 per cent" whatever that equates to.

This is interesting. I have never seen that trick. Perhaps I will have to go back and try it tonight. I dunno what this could be doing, unless it is giving a measure of negative resistance to overcome losses in the crystal by feeding some AC voltage over to the headphones (a few percent).

I have heard of taking a full wave bridge and using that as a balanced detector (using 1N34 or 1N38 diodes), with the headphones output across the floating ends of the rectifier bridge, and a small bypass across the tin can leads. This was in a book on 104 electronics projects that I picked up years ago.

My own agenda for doing this xtal bit was to use it as the basis for a recreation of the 1916 SE 143 spark tuner, with an outboard xtal or audion box (mebbie a globular '00 of some sort or a '99 for periodicity). My father used such gear back in the 20's and 30's commercially and was of the opinion that it was old and primitive, but it did actually work pretty well. It would make the cat's meow glowbug receiver with an outboard detector box, and a second outboard dual audio box. The receiver would be almost 3 feet long and 16 inches high. That should send a message to the silistate boys.....(:+)}..... I have been gathering up parts for the project for about 15 years, ever since I saw my first one in the real bakelite flesh. Now all I need is enough half inch bakelite sheet to make the panels (without going totally broke trying to buy it).

> Article  
> also says that mica diaphragm phones are the best for sensitivity. Have you  
> ever seen or heard of these? I'm guessing if any still exist they must be  
> pretty scarce!

Oy, Oy, Oy, yes.... these be the fabled, and legendary ``Baldies'', or

Baldwin ``Micas'', or Baldwin Type C Receivers. They are the best receivers ever made for radio use, bar none. If you ever lay hands upon a pair and they work, treasure, treasure, treasure them for a long time. They tend to be somewhat pricy these days, in good shape, and are a tad scarce in the common trade, but the antique wireless boys know them. It is reputed that they are sufficiently sensitive to add the equivalent of an extra stage of audio amplification to a detector set. In my hands with the ones I have (2 pairs, fair and good), they add about half an audio stage worth of gain (a perceptible gain compared to Brandes and W.E. fones). Note that that they are the HEAVIEST receivers ever made for radio use, and if you wear them for more than a while, you will get a case of chops cauliflower ears (my OM attested to that, and I do too).

> I had no trouble copying 160 and 75M AM although they were not too far away.  
> Someplace down in Massachusetts (I'm in Southern NH). It was a lot better on  
> 160 because of less congestion. That station was also only about 20 or so  
> miles away. By the way, the antenna was my 170ft end-fed wire and a cold  
> water pipe ground.

That is about what I am using for an antenna system. Works great! I was hearing stations about 500 miles distant on AM, but was not able to get it setup to cover 160M well, yet (that is my goal, tho).

> So how do you make a crystal heterodyne detector? I know what it does but how  
> do you actually configure it?

That is relatively easy. There are two basic ways to configure it, in the classical sense.

1. Inductively coupled -- take any small oscillator (originally a Duddell arc or Poulsen's arc were used) such as a 1 tuber or such and make a small oscillator (such as a Hartley or an Armstrong circuit) and couple it with a small link to the main tuning primary or secondary coil (originally the primary was used, but later in WWI, the secondary coil was used in Navy sets).
2. Capacitively coupled -- wind a two or three or so turn loop around the high side of the secondary coil, or around the low side of the primary coil, and use a BC-221 or LM or a high frequency (300-100hz) radio buzzer to excite it as the heterodyne. The buzzer does not work very well but it will work some. Classically the buzzer was used to tune the primary and secondary circuits to resonance in early receivers (1925 and earlier commercial and military receivers such as the SE 143, SE 1220, SE 1420 IP-501, IP-501-A) by exciting the receiver as a small local spark set might.

> (I've got three nice new solid state transceivers sitting here in front of me  
> with quite a bit of dust on them. Sometimes I get the feeling I'm going  
> backwards! )

Yup, hands-on proven technology is perfectly fine for glowbugging use. There was a TV show about a S. African inventor that was firmly of the mindset that in rural or third-world environments, high-tech was a loser, and ancient tech was often much better. He was the inventor of that famous spring wind-up radio receiver that is the hit in Europe and Africa. I would love to find one of those things and see what they are all about. There was mention by him of using that technology to power small transmitters, too.

73/ZUT DE NA4G/Bob UP

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Date: Thu, 22 May 1997 11:15:32 -0400 (EDT)  
From: rdkeys@csemail.cropsci.ncsu.edu  
Subject: DO NOT USE MIME ENCODED EMAIL ON GLOWBUGS

Please do not use MIME encoded (Metamail) messages or traffic on the Glowbugs list. I just received a CERT Advisory indicating that there is a vulnerability in Metamail that can allow unauthorized access to your computer and unauthorized command execution on your computer. This is potentially a less-than-pleasant situation. The invasion occurs through mail headers.

A patch to Metamail is available, but, until this situation is settled, I will not process any further Metamail or MIME encoded messages on any of my machines. The CERT/CC Coordination Center recommends installing a vendor patch on commercial software, patching Metamail yourself (a patch is available for software competent types), or disabling Metamail.

The numbers of MIME encodings lately have been increasing, and I don't want to take any chances. By tradition, and standard, pure email should be flat ascii, anyway, with encodings not required, unless uuencoded.

Bear with me. Reply to me or the listowner, off the list, if you have any particular problems.

Thanks/Bob/NA4G

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Date: Thu, 22 May 1997 11:43:46 -0400 (EDT)  
From: leeboo@ct.net (Leon Wiltsey)  
Subject: cheap tubes list

>To: ba  
>From: leeboo@ct.net (Leon Wiltsey)  
>Subject: cheap tubes list  
>Cc:  
>Bcc:  
>X-Attachments:  
>  
>Hi gang  
>  
>Am not going to send out list of tubes as at this point it is well over 1200.  
>also am not going to post list( got a very nice and polite message from  
listowner about  
>over posting and mail problems.)  
>After I post tube sale ready mess. If you are int. email me a list of just  
>what you want. There are no trans tubes but there are some tv output types  
>a few battery types and some audio output types  
>

68 yr old semidisabled senior  
(stroke got my balance & hand to eye coordination)  
ham agn as KF4RCL TECK+ (MUCH HAPPINESS)

BUILD MOST OF MY STATION EQUIP  
(tubes that is no SOLID STATE)

Leon B Wiltsey (Lee)  
4600 Lake Haven BLVD.  
Sebring, Fl. 33872

SEBRING FL. THAT WONDERFUL PLACE WHERE THERE IS NO QRM  
FROM ANYTHING LOCAL

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Date: Thu, 22 May 1997 12:01:28 -0400 (EDT)  
From: [rdkeys@csemail.cropsci.ncsu.edu](mailto:rdkeys@csemail.cropsci.ncsu.edu)  
Subject: Re: Black Acrylic Sheet

> Where do you find that black acrylic sheet that you use for panels, etc.?

Any good plastics shop (we have 2-3 here in Raleigh) should have black acrylic in 1/8 and 1/4 inch sheets. It is fairly commonly used. Don't confuse it with smoked plastic (they look almost the same in dim light and with the paper backings on). You can see through smoked plastic, but not through black acrylic.

Alas, the stuff is not as cheap as it used to be, so I dive into the scrap piles for anything that is black. Cut stuff is around 4 dollars a square foot or more, while scrap odds and ends plastic is a buck a pound.

Also, if you don't need the fancy black ``bakelite'' emulation, good clear 1/4, 3/8, or 1/2 inch acrylic works great for glowbugging projects such as a quick mockup before committing to a final piece. Then use the clear mockup for a template for drilling, etc. The clear is also good for building display demo sets, and kids sets.

If you are in the hinterlands, you probably need to go visit a city of 50K or more folks to find a plastic shop.

Real bakelite material is still available, from some of the suppliers, under various trade names, but Garolite comes to mind. It is NOT CHEAP, although radio sized panels in 1/8 or 3/16 thickness black XXX paper based grade runs about 10-20 bucks. Thicker stuff is very expensive. Four foot square sheets will run you out of house and home in a hurry. There is a big distributor in Los Angeles that has it, and probably there are some regional suppliers that might have it also. I forget the names right off, but can probably find it later. Someone around the list should know.

Bob/NA4G

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Date: Thu, 22 May 1997 10:17:00 -0600  
From: Alex Mendelsohn <[alexm@pennwell.com](mailto:alexm@pennwell.com)>  
Subject: FW: ROCK SOCKETS (A neat trick)

Thanks for your note Paul. I'm very sorry to hear that N2DAN is an SK. A few years ago I was lucky enough to meet him. It turns out he was a neighbor of



mine, and was located abt one mile away from my QTH in Freeport, New York at the time. Naturally I got to see his very fine machine shop in his small garage.

I asked him if he ever thought about going into high volume production with the Mercury paddle, and he said he tried, but was sorely disappointed when subcontractors turned out shoddy subcomponents. He said that if he were going to build Mercury keys, each one would be crafted by him--and him alone!

My regret is that I didn't buy one when I had the chance. But he always said I was the only op who used a bug who sounded like a keyer, and therefore I didn't need a keyer anyway. BTW: he had an uncanny ability to see musical rhythms in certain callsigns. It was a most unusual thing as I remember it; he always pointed out the calls that had the neatest ripplin' strings of dits and dahs!

I shall miss him.

Vy 73, Alex, AI2Q in Kennebunk, Maine .-.-.

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**From: Paul Carreiro, N6EV**

**To: ALEXM; 'GLOWBUGS@SMTP <glowbugs@www.atl.org>'**

**Subject: Re: ROCK SOCKETS (A neat trick)**

**Date: Thursday, May 22, 1997 1:02AM**

At 04:49 PM 5/21/97 -0400, Boatanchor Bob wrote:

>>

>> didn't the ft-243 rocks fit into the pins of an octal toob socket?

>> matt

>>

>

>Yes, you can fit two FT-243 rocks on an octal socket, A-La Johnson.

>That is a very common rock socket these days for general usage in HB

>gear, when the real sockets are not available. A simple high impedance

>snap switch or rotary will switch between the two, and if you mount say

>3 octal sockets, you can switch 6 crystals, easily.

>

>Bob/NA4G

To expand on this..

I found a neat trick outlined by Dave Ingram, K4TWJ in his book "Keys Keys Keys" (1991, CQ Communications). Dave has a section in the back of the book that describes "Classic Rigs" to be used with the bugs and keys. Among these classic rigs is a 6L6 transmitter.

The trick involves adding two capacitors on a standard octal socket that will

allow a single crystal to be used on 4 slightly different frequencies, depending on what pins the crystal is inserted into.

Connect a 150uuF cap between pins 1 and 5

Connect a 250uuF cap between pins 3 and 7

Pins 1 and 3 run off to the oscillator circuit as you would normally do.

Crystal position 1 - 3 ... No frequency shift (caps not in circuit)

Crystal position 3 - 5 ... The 150uuF cap is in series with the xtal  
Crystal position 1 - 7 ... The 250uuF cap is in series with the xtal  
Crystal position 5 - 7 ... Both the 150uuF and 250uuF caps are in series  
with the xtal.

Seems like a handy trick to have under the belt. I have not personally  
gotten around to trying this yet so can't attest to how much frequency  
shift you can expect with the values presented. Has anyone else tried  
this? Any draw-backs?

P.S. Speaking of "Keys"... a sad note.. Steve Nurkiewicz, N2DAN, the  
creator of the famous Mercury CW key became a silent key a few nights ago  
from cancer. Ask anyone who has one of his keys.. they will say they are  
without a doubt the best available. (I'm not regretting postponing my order).  
"73 and ZUT OM"

As always.. I'm looking for suggestions for the web site.  
73 all.  
Paul N6EV

Paul F. Carreiro - N6EV - ex-N6HCS - El Camino Village, CA  
E-Mail: carreiro@barepower.net - <http://www.barepower.net/~carreiro/>  
QRP - Boatanchors - Glowbugs - Mobile CW - QRQ +40WPM - ZUT!  
NorCal QRP #367 - QRP QRCI #8885 - CW FISTS #1407 - QRP-L #236  
Zuni Loop Mountain Expeditionary Force (QRP Field Day)

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End of glowbugs V1 #39  
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[AB4EL Ham Radio Homepage @ SunSITE](#)

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Created by **Steve Modena, AB4EL**  
Comments and suggestions to **[modena@SunSITE.unc.edu](mailto:modena@SunSITE.unc.edu)**

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